

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously Presented) A battery operated LED lighting apparatus comprising:

one or more connectors or terminals for receiving a battery voltage output by a battery;

at least one light emitting diode; and

a power supply including a boost regulating circuit, said power supply in communication with said battery and said at least one light emitting diode such that a constant voltage is continuously supplied to said at least one light emitting diode as said battery discharges, wherein over at least a portion of said discharge cycle said constant voltage is higher than said battery voltage, and wherein the power supply maintains the constant voltage by monitoring voltage across the at least one LED.

2. (Previously Presented) The battery operated LED lighting apparatus of claim 1 wherein said at least one light emitting diode comprises a plurality of light emitting diodes segregated into groups, said groups connected in parallel, wherein the light emitting diodes in each group are connected in series.

3. (Previously Presented) The battery operated LED lighting apparatus of claim 2 wherein said each group further includes a ballasting element connected in series with said plurality of light emitting diodes connected in series.

4. (Previously Presented) The battery operated LED lighting apparatus of claim 3 wherein said ballasting element comprises a resistor.

5. (Original) The battery operated LED lighting device of claim 1 wherein said power supply further comprises a buck regulator and wherein over a portion of said discharge cycle said battery voltage is greater than said constant voltage and said buck regulator is operative to regulate said battery voltage at said constant voltage.

6. (Currently Amended) A battery operated LED lighting apparatus comprising:

one or more connectors or terminals for receiving a battery voltage output by a battery;

at least one light emitting diode;

a power supply including a boost regulating circuit, said power supply in communication with said battery to produce an output voltage to said at least one light emitting diode such that a constant direct current is continuously supplied at a fixed level to said at least one light emitting diode as said battery discharges regardless of voltage fluctuations across said at

least one light emitting diode, wherein over at least a portion of said discharge cycle said output voltage is higher than said battery voltage, and wherein the power supply maintains the constant direct current by sensing electrical current directed through the at least one LED; and

a voltage sensor for monitoring a voltage across the at least one LED;

wherein the boost regulating circuit further uses the monitored voltage to maintain a consistent voltage level to the at least one LED.

7. (Previously Presented) The battery operated LED lighting apparatus of claim 6 wherein said at least one light emitting diode comprises a plurality of groups of light emitting diodes connected in series, said groups being connected in parallel.

8. (Previously Presented) The battery operated LED lighting apparatus of claim 7 wherein said each group further includes a ballasting element connected in series with said plurality of light emitting diodes connected in series, each ballasting element having a value such that the level of direct current drawn by each group is substantially identical.

9. (Original) The battery operated LED lighting device of claim 6 wherein said power supply further comprises a buck regulator and wherein over a portion of said discharge cycle said battery voltage is greater than said output voltage and

said buck regulator is operative to regulate said battery voltage at said output voltage to produce a constant current through said light emitting diode.

10. (Currently Amended) A LED lighting apparatus comprising:
- a light emitting diode for providing a continuous source of primary illumination for a subject in film, video, or digital imaging; and
 - a switch-mode regulator circuit having:
 - an input;
 - a first output, said first output in communication with said light emitting diode; and
 - a current feedback path and a separate voltage feedback path in communication with said output such that when said input receives a first voltage, said first output provides a constant current output at a fixed level to said light emitting diode ~~regardless of voltage fluctuations~~ while maintaining the output voltage substantially constant across said light emitting diode despite fluctuations in said first voltage.

11. (Previously Presented) The LED lighting apparatus of claim 10 wherein said switch-mode regulator comprises a boost regulator.

12. (Previously Presented) The LED lighting apparatus of claim 10 wherein said switch-mode regulator comprises a buck regulator.

13. (Previously Presented) The LED lighting apparatus of claim 10 wherein said switch-mode regulator comprises a buck/boost regulator.

14. – 16. (Canceled)

17. (Previously Presented) The LED lighting apparatus of claim 10, wherein said first voltage is a DC voltage.

18. (Currently Amended) The LED lighting apparatus of claim 10, wherein said first voltage is provided by a battery, and wherein said first output is maintained substantially constant when the first voltage gradually decays over time as said battery becomes depleted.

19. (Previously Presented) The LED lighting apparatus of claim 10, wherein said first voltage comprises, or is derived from, an AC voltage.

20. (Currently Amended) The LED lighting apparatus of claim 10, wherein said constant current output comprises a DC current.

21. (Previously Presented) The LED lighting apparatus of claim 10, further comprising a microprocessor configured to control said switch-mode regulator circuit.

22. (Previously Presented) The LED lighting apparatus of claim 21, wherein the microprocessor is configured to monitor said feedback path which senses the power load requirements of said light emitting diode, and is further programmed to maintain said constant current output based on said power load requirements.

23. (Canceled)

24. (Canceled)

25. (Previously Presented) The LED lighting apparatus of claim 10 further comprising a power supply which provides a second voltage to said input.

26. (Previously Presented) The LED lighting apparatus of claim 25 wherein said power supply comprises a battery.

27. (Previously Presented) The LED lighting apparatus of claim 26 wherein said switch-mode regulator comprises a buck/boost regulator and wherein over a first portion of a discharge cycle of said battery, said second voltage is greater than a constant voltage output level such that said switch-mode regulator operates in a buck mode and over a second portion of said discharge cycle of said

battery, said second voltage is less than said constant voltage output level such that said switch-mode regulator operated in a boost mode.

28. (Previously Presented) The LED lighting apparatus of claim 25 wherein said power supply comprises an AC input to receive power from an AC electrical outlet.

29. (Previously Presented) The LED lighting apparatus of claim 10, further including manually-operable variable intensity control circuit, such that the light output from the light emitting diode can be varied in brightness.

30. (Previously Presented) The LED lighting apparatus of claim 10, wherein said constant current output is provided by said first output to said light emitting diode at said fixed level as said first DC voltage decays over time.

31. (Currently Amended) A battery-powered lighting apparatus suitable to provide proper illumination for lighting of a subject in film, video, or digital imaging, comprising:

a plurality of light emitting diodes for illuminating a subject to be filmed or imaged; and

a switch-mode regulator circuit configured to receive a first input voltage derived from a battery, and having a first output in communication with said light emitting diodes to provide a continuous current output to the

light emitting diodes at a ~~predefined~~ predetermined level ~~regardless of voltage fluctuations across said light emitting diodes~~, wherein said switch-mode regulator further includes a current feedback path to sense said first output and regulate said current output to maintain it at said ~~predefined~~ predetermined level, and a separate voltage feedback path to sense the output voltage across said light emitting diodes and to regulate the output voltage at a substantially constant level across said light emitting diodes despite fluctuations in said first input voltage.

32. (Previously Presented) The battery-powered lighting apparatus of claim 31, wherein said light emitting diodes are segregated into groups, each group comprising a plurality of said light emitting diodes connected serially, said groups being connected in parallel.

33. (Previously Presented) The battery-powered lighting apparatus of claim 32, further comprising a ballast element in series with each group, each ballasting element having a value such that a level of direct current drawn by each group is substantially identical.

34. (Previously Presented) The battery-powered lighting apparatus of claim 33, wherein said ballasting element comprises a resistor.

35. (Currently Amended) ~~The~~ A battery-powered lighting apparatus ~~of claim 33,~~ suitable to provide proper illumination for lighting of a subject in film, video, or digital imaging, comprising:

a plurality of light emitting diodes for illuminating a subject to be filmed or imaged; and

a switch-mode regulator circuit configured to receive a first input voltage derived from a battery, and having a first output in communication with said light emitting diodes to provide a continuous current output to the light emitting diodes at a predetermined level regardless of voltage fluctuations across said light emitting diodes, wherein said switch-mode regulator further includes a feedback path to sense said first output and regulate said current output to maintain it at said predetermined level;

wherein said light emitting diodes are segregated into groups, each group comprising a plurality of said light emitting diodes connected serially, said groups being connected in parallel;

further comprising a ballast element in series with each group, each ballasting element having a value such that a level of direct current drawn by each group is substantially identical, wherein said ballasting element comprises an inductor.

36. (Currently Amended) ~~The~~ A battery-powered lighting apparatus ~~of claim 33,~~ suitable to provide proper illumination for lighting of a subject in film, video, or digital imaging, comprising:

a plurality of light emitting diodes for illuminating a subject to be filmed or imaged; and

a switch-mode regulator circuit configured to receive a first input voltage derived from a battery, and having a first output in communication with said light emitting diodes to provide a continuous current output to the light emitting diodes at a predetermined level regardless of voltage fluctuations across said light emitting diodes, wherein said switch-mode regulator further includes a feedback path to sense said first output and regulate said current output to maintain it at said predetermined level;

wherein said light emitting diodes are segregated into groups, each group comprising a plurality of said light emitting diodes connected serially, said groups being connected in parallel;

further comprising a ballast element in series with each group, each ballasting element having a value such that a level of direct current drawn by each group is substantially identical, wherein said ballasting element comprises a transistor having a fixed operational current established at least in part by a zener diode.

37. (Previously Presented) The battery-powered lighting apparatus of claim 31, wherein an intensity level of said light emitting diodes is manually adjustable via a dimming control input.

38. (Previously Presented) The battery-powered lighting apparatus of claim 37, wherein said light emitting diodes are controlled to operate at a substantially constant current corresponding to the selected intensity level.

39. (Previously Presented) The battery operated LED lighting device of claim 1, further comprising a dimmer control such that the intensity of the at least one light emitting diode is adjustable.

40. (Previously Presented) The battery operated LED lighting device of claim 6, further comprising a dimmer control such that the intensity of the at least one light emitting diode is adjustable.

41. (Currently Amended) The battery operated LED device of claim 6, wherein when the battery output voltage ~~is no longer sufficient to supply the constant direct current to the at least light emitting diode at said fixed level~~ reaches a predefined voltage level corresponding to a battery capacity percentage threshold level, the power supply automatically cuts off the current to the at least one light emitting diode.

42. (Currently Amended) The battery-powered lighting apparatus of claim 31, wherein when the first input voltage ~~is no longer sufficient to supply the current output to the light emitting diodes at said predefined level~~ reaches a predefined voltage level corresponding to a battery capacity percentage threshold

level, the switch-mode regulator circuit automatically cuts off the current output to the light emitting diodes.